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importance of agricultural plants and their future possibilities. It will be found a valuable reference book upon many questions pertaining to economic and commercial aspects of tropical plants. Botanically, however, the book is often defective, as for example, in speaking of the growth of *Cannabis sativa* for its opium-like drug, the author says: "The male flowers are removed in November, for if the female flowers are fertilized there is no formation of the drug."—O. W. CALDWELL.

The geography of ferns

It is a praiseworthy thing for an investigator, who has devoted years to taxonomic exploration, to bring together in readable form the many things of geographic interest which he has observed. It is exactly this service which CHRIST, the well-known student of the ferns, has now performed.³ The volume is divided into two parts, corresponding somewhat to the usual divisions of ecological and floristic geography. CHRIST regards the ferns as controlled by the same general distributional factors as the seed plants, the most noteworthy difference consisting in the pronounced tendency of ferns to be hygrophytic mesotherms. The great fern areas of the world are essentially coincident with the forest areas, very few species existing where the rainfall is less than 60 cm., and the greatest development occurring where the rainfall is over 200 cm.

The edaphic conditions under which ferns live are first noted, attention being called to the fact that most species are humus forms, and but slightly dependent on the mineral nature of the soil. Under the head of climatic conditions, a number of characteristic fern formations are described. The hygrophytic ferns are treated at considerable length, especial attention being devoted to the epiphytic forms. The features of the xerophytic ferns are well portrayed. In the floristic part of the work, consideration is given to a number of cosmopolites, and also to endemic forms and to species with disconnected areas. The body of the second part is made up of the treatment of the floristic regions of the world. Here, as elsewhere in the volume, the author makes it very clear that the ferns, in spite of their great age, are far from being a senescent group.

The volume is a mine of information, and will be of the highest value to all botanists. The excellent index makes it possible to find at once the known ecological and geographic facts concerning most living ferns.—HENRY C. COWLES.

An organic chemistry

The third English edition of HOLLEMAN'S *Organic chemistry* has just appeared,⁴ edited by A. JAMIESON WALKER. The value of the book as a text

³ CHRIST, H., *Die Geographie der Farne*. 8vo. pp. 358, with frontispiece, *figs.* 129 (mostly photographic reproductions), and 3 *maps*. Jena: Gustav Fischer. 1910.

⁴ HOLLEMAN, A. F., *A textbook of organic chemistry*. 8vo. pp. xx+599. *figs.* 80. New York: John Wiley & Sons. 1910.